Michigan Department of Community Health
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LabLink

Michigan Department of Community Health
Bureau of Laboratories

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The Flu Pandemic That Didn't Happen – Yet

Frances Pouch Downes, Dr. P.H.
Laboratory Director

In late April there was unexpected public interest in a laboratory quality assurance program, proficiency testing. The alarm was caused by distribution of a historic influenza stain for which the majority of the population has no or little immunity. As a precaution, laboratories were asked to confirm destruction of proficiency testing materials to assure that even the remote chance that laboratory transmission to the community was eliminated.

From 2004 until April 2005, Meridian BioScience, Inc. produced proficiency testing panels for viral culture and rapid viral diagnostics that contained live influenza A H2N2 virus. The materials were distributed by four proficiency testing services: the College of American Pathologists (CAP) primarily and to a lesser extent by Medical Laboratory Evaluation, the American Academy of Family Physicians and the American Association of Bioanalysts. CAP distributed the materials to 135 facilities in Michigan and 3,747 laboratories worldwide.

The Michigan Department of Community Health, Bureau of Laboratories (BOL) received the materials and confirmed to CAP its destruction. BOL involvement in this issue did not end there. Because public health laboratories have a role in assuring laboratory preparedness for potential or evolving health and safety risks, we worked directly with the laboratory community in Michigan. Information on the situation was shared immediately with microbiology laboratories. Working from lists provided by CAP and the Department of Health and Human Services, each of the laboratories was contacted by telephone to confirm that the material had been destroyed. The BOL provided consultation on acceptable methods to destroy viable virus, monitoring laboratory workers for indications of infections, general infection control practices and safe handling of future proficiency testing and patient specimens. Almost all labs had already destroyed the materials by the time they were contacted. However, there were delays in notification and assumptions that the notice to destroy did not apply.

Influenza A H2N2 first emerged in 1957 and 1958 as the agent of the Asian influenza pandemic. It was transmissible in humans, causing annual illness and death globally until 1968. It has not been naturally transmitted since 1968. There is no indication that H2N2 is more pathogenic than other influenza strains. However, because it has not circulated in over 30 years, those born after 1968 will not have immunity and H2N2 is not included in the currently vaccine formulation. Generally, laboratory strains of influenza that have been cultured repeatedly are less transmissible than wild type strains. Studies to confirm the

virulence of the H2N2 strain distributed have not been performed.

An influenza pandemic, or a worldwide epidemic, results when a novel or long-absent strain of influenza emerges and circulates globally. The typical cycle for influenza pandemics is 20 to 30 years. Laboratory-acquired influenza infections have not been frequently identified and there are no specific immunization recommendations for laboratorians. Like other health care workers the recommendations for annual vaccination are based on personal risk factors and potential contact with vulnerable populations.

Public health officials are particularly vigilant in the surveillance of unusual influenza activity because cycle of 20 to 30 years predicts that a pandemic is overdue. Also, monitoring of recent avian influenza activity in Asia indicates that bird and mammal disease and transmission with the novel H5N1 is occurring. If H5N1 evolves the ability to infect humans and efficiently transmit to other humans, the global situation will be set for a pandemic. Preventing death and illness in the face of a novel influenza strain is challenging because virtually everyone is at risk. It takes over 12 months to produce vaccine using current vaccine production methods and the vaccine production capacity is not sufficient to vaccinate the entire population. Anti-viral drugs, also in limited supply, must be given early and even then are not totally effective in preventing illness.

This situation confirmed the importance of laboratory networks and the role of the laboratory community in preparing for and responding to pandemic influenza and other emerging health threats. The laboratory network is a collaboration of clinical, hospital, practice-based and public health laboratories that provide complementary levels of testing service. Essential to success of the laboratory network is communications. The ability to contact laboratories with urgent public health information is needed. Each laboratory in Michigan should be enrolled in the MIHAN (see page 3 for details) so that laboratories can communicate during and between crises.

MDCH has developed a response plan for pandemic influenza that is being refined and tested. In order to control a pandemic, public health laboratories need to be able to identify novel strains. This situation was only recognized due to laboratory contamination of a clinical viral culture. The proficiency testing material was not intended to test strain-typing capabilities. If a public health laboratory attempted strain typing, currently available typing reagents would cross-react with H3. H2-specific and other novel antigen-specific (e.g., H5) reagents will be needed for surveillance. Finally, this event provided an opportunity, albeit unplanned, to exercise testing capabilities and review safety and infection control processes. Fortunately, there have been no reported cases of H2N2 infections in laboratory workers or any community contacts.

Special acknowledgement of their efforts to contact all Michigan facilities receiving the materials go to Patty Clark, Acting Virology Section Manager, Dr. Patricia Somsel, Infectious Diseases Division, Bill Crafts, Bacterial and Parasitic Serology unit and the many Virology and Molecular Biology personnel. (See related article on page 7)

Michigan Health Alert Network

William Schneider, RM(AAM)
Enteric/STD/Chromatography Unit

The Michigan Health Alert Network (MIHAN) is a system designed to alert all hospitals, emergency rooms, laboratories and other health care entities of situations requiring their attention and expertise. The goal of MIHAN is immediate delivery of emergency information to affected areas so the public and private health community could respond in an expedient and appropriate manner. It has become a useful vehicle for distributing health related information that is not necessarily emergency related but may affect the health of Michigan citizens. The MDCH Bureau of Laboratories and Bureau of Epidemiology use the MIHAN to deliver information and alerts from CDC and other sources.

The Bureau of Laboratories is attempting to utilize the MIHAN to distribute information because it is quicker, more efficient and less costly then the fax system currently in use. While trying to move to this system, it has been found that not all of the target audience for the fax system is enrolled on the MIHAN system. MDCH would like to provide the information needed to enroll on MIHAN.

The MIHAN is a web-based application so Internet access is required. If you do not have Internet access and normally receive information from the Bureau of Laboratories via fax, please talk to your appropriate manager(s) about the need for Internet access so your agency can participate with this important alerting network. If Internet access is still not available, Dr. Frances Downes, MDCH Bureau of Laboratories Director, has agreed to discuss the need for this access with your manager(s) and to encourage them to help move this forward. An E-mail address is required to open an account on MIHAN. If you do not currently have an E-mail address, the MIHAN support staff person for your region (see Table 1) can provide you with one.

MDCH feels it is very important that all laboratories have at least two people enrolled on the MIHAN so alert information is readily available during emergency situations. This is increasingly evident in today's world. People travel throughout the world more than ever before, carrying with them any disease manifestations they may have encountered along the way. September 11, 2001 taught the lesson of being prepared to pull together resources for a major emergency due to terrorism. Communication is the key to a coordinated emergency response.

Figure 1 shows the Michigan State Police emergency response regions. Locate your county on the map and note the number of the emergency response region. See Table 1 to locate the appropriate MIHAN contact for your region. They will assist you with enrolling on the MIHAN and help you obtain training for its use. The information distributed by the MIHAN system will ensure you are able to perform your duties effectively in an emergency. MDCH needs you on the MIHAN to maintain regular communication regarding laboratory and epidemiology concerns. This is a win-win situation for public and private health care. The ultimate winners are the citizens of Michigan.

Figure 1.

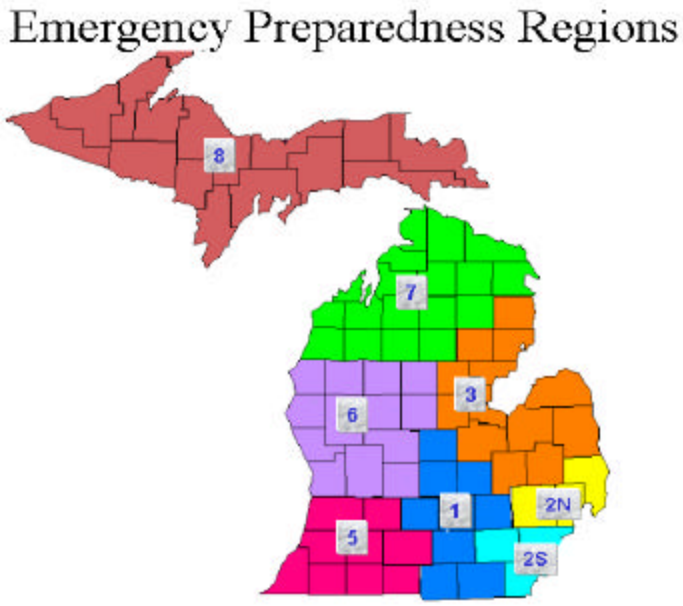

Table 1. Michigan Health Alert Network Support Staff

Support Person	Support for Region(s)	E-mail	Telephone
Kerry Aquino	Regions 7, 8 and State	aquinoK@michigan.gov	(517) 335-9845
Bill Colville	Statewide Project Coordinator	colvilleb@michigan.gov	(517) 335-9529
Al Florey	Regions 2 North and 5	aflorey@mphi.org	(517) 324-7348
Craig Henry	Regions 1 and 6 and State	henryc1@michigan.gov	(517) 335-8279
Kerie Wenzlick	Regions, 2 South and 3	kwenzlic@mphi.org	(517) 324-8303

Recent Publication

The article “Instrumentation Detection Limits: Can We Ever Let 3s Go?” by Paul R. Loconto, Ph. D. was published in the *American Laboratory News Edition*, Volume 37, Number 4, in February 2005. (www.americanlaboratory.com)

Loconto is a Laboratory Science Specialist in the analytical chemistry section at MDCH, conducting method development for the bio-monitoring program and enviro-health analysis for Michigan’s Chemical Terrorism Laboratory Network (CTLN). He is also the author of the book *Trace Environmental Quantitative Analysis: Principles, Techniques, and Applications*, Marcel Dekker, 2001.

LabLink is published quarterly by the Michigan Department of Community Health, Bureau of Laboratories, to provide laboratory information to Michigan health professionals and the public health community.

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Editor
Susan L. Shiflett

DCH-0096

Quirky Bugs….
Could it be Bioterrorism?

Sandip Shah, MS, MT(ASCP) and James Rudrik, Ph.D.
Reference Bacteriology Unit and Microbiology Section

One of the thrilling aspects of working in a bacteriological reference laboratory is that everyday brings something different, something new or something quirky. It is never boring. Sheer unpredictability is quite challenging and exciting.

The last day of March 2005 was just such a day when the reference bacteriology unit identified an isolate as *Burkholderia pseudomallei.* The organism was isolated on March 4, 2005 from a culture of drainage from swollen right knee of a patient that presented to outpatient services at a 350-bed hospital. The isolate was submitted to MDCH as an unidentified Gram negative rod. The patient was an approximately 60-year-old Vietnam veteran with no recent travel history. Earlier medical history revealed that the patient was treated for right hand laceration and left arm burns in late 1960s in Thailand. He was diagnosed with histoplasmosis in late 1970s by biopsy culture and an abnormal chest X-ray. He had multiple visits with in the VA system for fevers and sinusitis through the 1980s. During early 1990s, he had multiple cerebral lesions. Brain biopsy cultures were taken and showed no growth while on broad spectrum antibiotic. He apparently recovered.

On March 8, 2005 the patient had knee surgery to repair a putative torn meniscus. Cultures taken from the knee and leg yielded the same organism. The patient underwent surgery again on March 21 and cultures of the knee, leg and calf were taken. The rapid identification protocols (Microscan and API systems) at the hospital did not result in a definitive identification. The isolate was shipped to the laboratory at MDCH, Lansing, where it was presumptively identified by traditional biochemical profiling and cellular fatty acids analysis on a gas liquid chromatograph. The identification of *Burkholderia pseudomallei* was confirmed by Polymerase Chain Reaction (PCR) assay.

Burkholderia pseudomallei is the etiologic agent of meliodosis which is a glanders-like illness of humans and some other mammals such as rats, rabbits, guinea pigs, sheep, goats, and horses. Although animals may be infected, meliodosis is not considered zoonotic and humans are usually infected by contact with contaminated soil and water through breaks in the skin or by inhalation. Person-to-person transmission does not play an important role in the spread of the organism, however, rare cases of transmission by sexual contact or possibly by transplacental transfer have been reported. Laboratory-acquired infections have been reported and were associated with aerosol producing procedures.

The organism was first described by Whitmore in 1925 and has been classified in several different genera including *Pfeiferalla, Bacillus, Flavobacterium, Actinobacillus, Loeferella, Mallomyces*, and *Pseudomonas* before being placed in *Burkholderia*. The organism is endemic in Southeast Asia, Guam, Madagascar, and Australia.

The incubation period is uncertain, but clinical manifestations may be subacute, acute, or chronic. In subacute infections, pulmonary symptoms consisting of fever, productive cough with blood tinged sputum, lung abscesses, and pleural involvement. Joint pain may also occur. Serologic surveys suggest that subacute cases predominate in endemic areas. Acute patients present with high fevers, chills, blood-tinged sputum, diarrhea, and abdominal pain. These patients may improve and then dramatically worsen with an overwhelming septicemia that may lead to death. Mortality rates in patients with fulminant sepsis approaches 90%. Physical examination may suggest pneumonia, empyema, lung abscess, hepatomegaly, splenomegaly, and acute arthritis. While most infections occur by the pulmonary route, traumatic wounds and burns may also cause infection. Genitourinary, neurologic, and brain abscess have also been reported. Chronic infections may persist for

years, mimic tuberculosis and present with lung abscess, osteomyelitis, liver or spleenic abscess, and lymphadenopathy.

Infections may not be apparent for years. Since veterans of the Vietnam War may have been exposed while in Southeast Asia, there is some concern that a significant number of veterans may have latent infections with this organism. The potential for latent infections has led to the term "Vietnamese time bomb" to describe this organism.

Burkholderia pseudomallei is an aerobic, glucose oxidizing, motile (three or more polar tufts) gram negative rod. Most cells show bipolar staining at 24 hours if incubated at 35^0C (See Figure 1). It oxidizes xylose, mannitol, lactose, maltose and less frequently sucrose. It grows on MacConkey agar but does not decarboxylate lysine. It is proteolytic and reduces nitrate with the formation of a small volume of gas, which may not be detected unless incubated at 25^0C. The organism grows well on 5% sheep blood agar and shows white opaque growth with a sheen by 48 hours. Individual colonies are initially smooth and convex which slowly become umbonate with an uneven, wrinkled surface (See Figure 2). Most cells are oval to round at 48 hours and only the periphery stains which may be misinterpreted as spore formation. Although sniffing plates is no longer an acceptable laboratory practice, frequently it has a characteristic musty, earthy odor that will be evident in the incubator.

Other distinguishing biochemical properties of *B. pseudomallei* include positive reactions for catalase, oxidase and Simmons citrate; most strains fail to grow on SS agar and Cetrimide agar; ornithine and urea are negative, gelatin is hydrolyzed if incubated for extended period (7-14 days); litmus milk peptonizes; growth occurs at 25, 35 and 42^0C; and the organism grows in nutrient broth without NaCl but does not tolerate 6% NaCl. It is also resistant to colistin.

Pseudomonas stutzeri may sometimes be confused with this organism. But lack of yellow growth pigment, ability to oxidize lactose, its proteolytic nature and polar tufts (flagella) usually distinguishes it from *P. stutzeri*. It is also confused with *Burkholderia cepacia*, however, *B. pseudomallei* often produces small amount of gas from nitrate, is lysine-negative and arginine-positive.

B. pseudomallei is considered a Category B agent for bioterrorism. Category B agents tend to cause debilitating illness and are less likely to cause high mortality than Category A agents like *Yersinia pestis* or *Bacillus anthracis.* These organisms may be difficult to recognize in the laboratory and even though commercial identification systems like Vitek-1, Vitek-2, and MicroScan WalkAway have this organism in their database, further studies are needed to confirm their reliability. Since *B. pseudomallei* is an uncommon isolate for clinical laboratories, MDCH should be notified whenever a laboratory suspects this organism. The isolate should be forwarded to the nearest Confirmatory Laboratory (Level B Lab) for further testing.

Fig. 1. Gram stained smear at 1000x, young culture

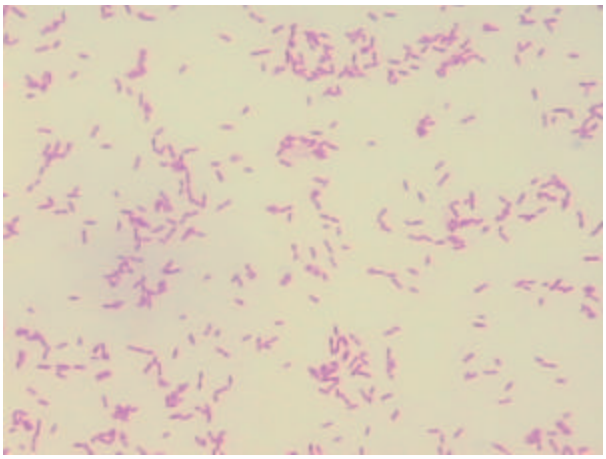

Fig. 2. Growth on Sheep blood agar at 48 hours

Influenza A, H2N2 Samples Sent to Labs as a Part of Proficiency Testing

Patty Clark, M.P.H.
Virology Section

Late last year and in early 2005, Influenza A, H2N2 specimens were sent to laboratories around the world as a part of routine proficiency testing. This virus was responsible for a pandemic in 1957 and has not been documented in circulation since 1968, suggesting immunity would be minimal in those born after 1968. Specimens were sent from four proficiency providers, the College of American Pathologists (CAP), Medical Laboratory Evaluation, the American Academy of Family Physicians (AAFP), and the American Association of Bioanalysts (AAB). Over 100 agencies in Michigan received these samples as a part of their proficiency assessment. All samples contained viable virus and were sent for either viral culture or direct antigen detection.

A timeline and recap of events follows:

April 8, 2005:

MDCH was notified by Association of Public Health Laboratories (APHL) that viable Influenza A, H2N2, was sent to labs worldwide as a part of proficiency testing materials.

April 11,2005:

CAP notified MDCH that specimen VR1 05 in survey VR1-A 2005 was Influenza A, H2N2, asked that the specimen and all derivatives be destroyed, and requested a faxed confirmation of destruction be sent to CAP. MDCH Bureau of Laboratories (BOL) sent out its first broadcast fax to state labs.

April 12, 2005:

CAP notified MDCH of two other surveys that contained Influenza A, H2N2 samples. MDCH BOL sent out the second broadcast fax to state labs including all CAP survey numbers, instructions for destruction of the samples, and CDC's recommendations for monitoring of laboratory staff. MDCH Virology laboratory destroys its samples, sample derivatives, and faxes confirmation to CAP.

April 14, 2005:

MDCH BOL received a listing of agencies in the state that received the Influenza proficiency samples from any of the four proficiency providers. Lab staff began contacting these agencies to confirm they were aware they had the samples, request sample destruction and fax confirmation to the proficiency provider, and provide any needed technical expertise.

April 18, 2005:

Third broadcast fax sent to state laboratories. At this time, MDCH confirmed destruction of all known samples of H2N2 in the state. Later additional information was received indicating a few labs were inadvertently left off the original state listing.

April 22, 2005:

MDCH BOL staff confirmed destruction of all H2N2 material in the state.

The World Health Organization (WHO) has confirmed destruction of all H2N2 material sent outside the United States. The U.S. Department of Health and Human Services (HHS), the Centers for Disease Control and Prevention (CDC), and the WHO are continuing investigations to evaluate the cause of this incident and determine how best to prevent similar incidents from occurring in the future.

FUN FUNGI.....
Cladophialophora bantiana

Sandy Arduin MT(ASCP) & Bruce Palma MT(ASCP)
Mycobacteriology/Mycology Unit

A 55-year old obese male with history of poorly controlled type II diabetes and associated chronic renal insufficiency underwent a cadaveric kidney transplant in 2003. Subsequent recurrent urinary tract infections where alleviated by surgical revision of the ureter in December, 2004. While in the hospital, the patient developed a transudative pleural effusion. A nodule was noted in the upper right lobe of the lung, but was small enough that a biopsy was not done. The patient was discharged in January 2005 but was readmitted a week later due to new neurologic symptoms. An MRI of the brain revealed a ring-enhancing lesion with surrounding edema in the right fronto-parietal lobe. A CT scan of the lung nodule revealed it had doubled in size in six weeks. Bronchoalveolar lavage (BAL) and brain biopsy specimens were submitted to the lab for bacterial, fungal and viral culture. Wet mount preps from the brain biopsy revealed septate hyphae. Both BAL and brain biopsy cultures grew *Cladophialophora bantiana*.

Cladophialophora bantiana, previously known as *Xylohypha bantiana*, is a pathogenic fungus primarily known for causing cerebral phaeohyphomycosis (forming dematiaceous hyphal to yeast forms in tissue) in humans and is usually fatal. *C. bantiana* is most commonly found in the form of brain lesions but may occasionally cause skin lesions. Because most cerebral infections occur without cutaneous lesions, it is thought that the organism is acquired by inhalation. Although most infected patients are immunocompetent at the time of infection, *C. bantiana* can occur as an opportunistic infection in immunocompromised patients. The fungus has no ethnic or geographic predilection but does more frequently infect men than women.

C. bantiana is a demateaous fungus that grows well up to 42°C. This ability differentiates it from other *Cladophialophora* spp., most significantly *Cladophialophora carrionii* (previously *Cladosporium carrionii*), which has a maximum growth temperature of 35°C. *C. bantiana* is a moderately fast growing organism producing olivaeceous-grey or olivaeceous-green, suede-like colonies with an olivaceous black reverse. Microscopically, conidia are dematiaceous and are formed in long, strongly coherent, sparsely branched acropetal chains (the youngest conidia at the tip and the oldest at the base). Conidia are one celled (occasionally two celled), smooth walled and ellipsoidal to fusiform in shape. Like all *Cladophialophora* spp, *C. bantiana* lacks the distinctly pigmented hila (pigmented scar at base of conidium) found in *Cladosporium* species. Very long, sparsely branched chains of conidia, rare or absent shield cells, and growth at 42°C are the key identifying characteristics for *C. bantiana*.

Cladophialophora bantiana

(NOTE: Thank you to the Henry Ford Health System for the submission of this specimen)

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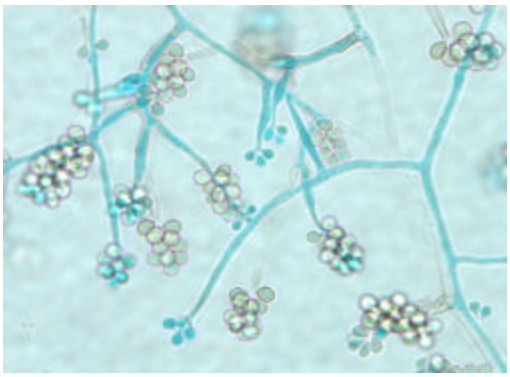
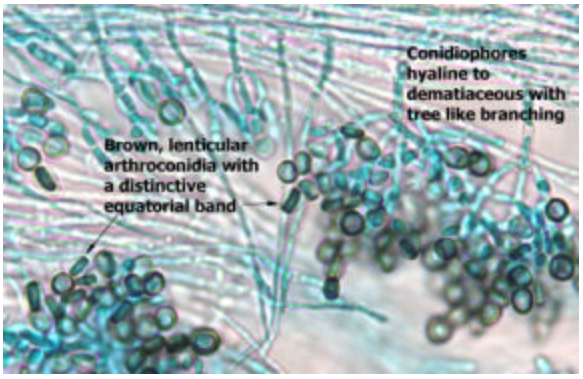
Last Issue's Picture Quiz Answer:



***Tritirachium* species**

This picture is of the mould *Tritirachuium* species, an airborne fungus that is an agent of corneal ulcers. Colonies range in color from tan to rose or lilac. They are slow growing and velvety. Microscopically, conidiophores are long, narrow and hyaline. The upper part of the conidiophore bears conidiogenous cells with a swollen base that taper to a sympodial rachis. They are arranged in verticilliate whorls. Conidia were globose, hyaline to golden in color and are produced in acropetal succession on the rachis-like sporgogenous cell.

This Issue's Picture Quiz:
What Mould Is This?



This mould was received as a referred culture from facial skin. The colony was grayish black and slow growing. Microscopically, the conidiophores were hyaline to dematiaceous with tree like branching. Terminal branches formed hyaline to brown lenticular conidia with a distinctive equatorial band.

The Importance of Glomerular Filtration Rate Calculation in Reducing Kidney Disease in Michigan

John Dyke, Ph.D.
Bureau of Laboratories

There are more than 20 million Americans who have chronic kidney disease (CKD). It is the ninth leading cause of death. There are an additional 20 million that are deemed to be at high risk of developing disease. Approximately 60% of new cases of chronic kidney disease are the result of secondary complications associated with diabetes and hypertension. The glomerular filtration rate (GFR) is considered the best overall index of kidney function in health and disease. Most clinicians estimate the GFR based on the measurement of serum creatinine. However, the accuracy of this estimate is affected by factors other than creatinine clearance. The Modification of Diet in Renal Disease (MDRD) study focused on the development of an equation that would compensate for these variables and provide a better estimate of renal function. The final equation included adjustments that compensated for age, sex and ethnicity.

The annual rate of new cases of CKD in Michigan is higher than the national average and has become a serious public health issue. This reality stimulated a unique partnership between the

Michigan Department of Community Health (MDCH) and the National Kidney Foundation of Michigan (NKFM). The focus of this partnership was the development of a strategic action plan engaging health care professionals and the community to reverse the increasing trend of kidney disease in Michigan. The initial step in this process was the formation of a task force charged with building a set of guidelines for reducing morbidity and mortality associated with CKD.

The NKFM and the MDCH brought together a comprehensive panel, which included nephrologists, primary care physicians, laboratory directors, clinical chemists, pathologists, private health insurers, and public health officials. There were two objectives to be resolved by the panel. The first was to confirm the use of the MDRC equation as the current best prognosticating tool for calculating GFR. The second was to establish guidelines in Michigan for the use of the GFR calculation in assessing kidney function. The group was asked to identify ways to encourage laboratories to implement these recommendations. The panel suggested a survey be conducted of current practices in Michigan clinical laboratories. The survey was to determine the number of laboratories that reported GFD based on the National Kidney Foundation's recommended use of the MDRD calculation.

The survey of 120 clinical laboratories providing clinical chemistry services in Michigan, asked two questions.

1. Does your laboratory report a glomerular filtration rate (GFR), as recommended by the national kidney foundation, using age, sex, and ethnicity as part of the calculation (MDRD)?
2. If the calculation is done as stated above, who does the calculation?

There were 68 (56%) responses to the survey. Of those responding to question one, 15 (22%) routinely provided a GFR calculation based on MDRD. Thirteen (19%) provided results only when ordered by the submitting care provider. The remaining 40 (59%) did not use GFR results as part of their chemistry profile.

The response to question two indicated that of the twenty-eight laboratories providing GFR results, 18 (64%) did the calculations on site in the laboratory, eight (29%) were done by their reference laboratory and two (7%) were done in their facility by other than laboratory personnel.

The survey confirmed the panel's initial assumption that the use of GFR is primarily established in major medical centers. Primary care physicians and those providing laboratory services in rural areas, where the understanding of the use of GFR is limited, provide the majority of medical care in Michigan.

The panel had six (6) recommendations and actions to be taken.

1. To recommend the use of GFR for the early detection of kidney disease. This early intervention was identified as being critical for patients with diabetes, hypertension and those with a family history of kidney disease.
2. Guidelines for the management of patients with reduced kidney function, as identified by GFR results, were reviewed and adopted.
3. The Michigan Quality Improvement Consortium (MQIC) has created a draft guideline "Evaluation and Management of Adults with Chronic Kidney Disease" based on the panel's recommendations.
4. A mailing to laboratories in Michigan is planned for the spring of 2005 to provide information on the value of providing a GFR calculation on patients where a serum creatinine has been ordered.
5. The Michigan Association of Health Plans (MAHP) will provide information to their physicians on the importance of using GFR as part of health care screening.
6. Program development is underway to provide education for primary care physicians, health care providers, private agencies, insurance payers, and patients on the use of GFR and treatment strategies for the reduction of CKD.
7. Establish partnerships with health care plans to evaluate current practices and determine intervention strategies.

The collaboration of traditional and non-traditional partners in Michigan has the potential to reduce the number of preventable deaths as well as reduce unnecessary expenditures of limited health care dollars.

Notice Of Pilot Project For Expanded Newborn Screening

Kevin Cavanagh, Ph.D.
Division of Chemistry and Toxicology

MDCH initiated a pilot project on April 18, 2005 to expand the current dry blood spot screening panel of 11 disorders to include 29 additional amino acid, fatty acid oxidation and organic acid disorders. The purpose of the project is to evaluate the feasibility of Tandem Mass Spectrometry in detecting these disorders in Michigan newborns and to assure that there are follow-up and medical management systems in place for early diagnosis and treatment. The hope is to eventually screen Michigan newborns for all disorders specified in the March 8, 2005 recommendation by the Health Resources and Services Administration (http://mchb.hrsa.gov/screening/). The additional disorders included in the pilot study are listed below:

Amino Acid Disorders

Argininemia (Arg)
Tyrosinemia (Tyr I, II, III)

Fatty Acid Oxidation Disorders

Very long-chain acyl-CoA dehydrogenasedeficiency (VLCAD)
Long-chain L-3-OH acyl-CoA dehydrogenase deficiency (LCHAD)
Tri-functional protein deficiency (TFP)
Carnitine uptake defect (CUD)
Short chain acyl-CoA dehydrogenase deficiency (SCAD)
Glutaric acidemia type II (GA2)
Medium/short-chain L-3-OH acyl-CoA dehydrogenase deficiency (M/SCHAD)
Medium-chain ketoacyl-CoA thiolase deficiency (MCKAT)
Carnitine palmitoytransferase II deficiency (CPT II)
Carnitine: acylcarnitine translocase deficiency (CACT)
Carnitine palmitoyltransferase I deficiency (liver) (CPT IA)
Dienoyl-CoA reductase deficiency (DE RED)

Organic Acid Disorders

Isovaleric acidemia (IVA)
Glutaric acidemia type 1 (GA1)
3-OH 3-CH3 glutaric aciduria (HMG)
Multiple carboxylase deficiency (MCD)
Methymalonic acidemia (mutase deficiency) (MUT)
3-Methylcrotonyl-CoA carboxylase deficiency (3MCC)
Methylmalonic acidemia (Cbl A, B)
Propionic acidemia (PROP)
B-Ketothiolase deficiency (BKT)
Methylmalonic acidemia (Cbl C, D)
Malonic academia (MAL)
Isobutyryl-CoA dehydrogenase deficiency (IBG)
2-methyl 3-hydroxy butyric aciduria (2M3HBA)
2-Methylbutyryl-CoA dehydrogenase deficiency (2MBG)
3-Methylglutaconic aciduria (3MGA)

For questions or comments, please contact the MDCH newborn screening office at 517-335-9205.

Save the Date

October 27, 2005

Hepatitis C:
Collaboratively Confronting the Challenge

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Ypsilanti, Michigan

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American Liver Foundation
Michigan Chapter

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